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ORIGINAL ARTICLES.

UNIOULAR DIPHTHERITIC CONJUNCTIVITIS.

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The statistics of diphtheritic conjunctivitis generally are very confusing. The frequency with which the disease occurs depends in part, but not entirely, upon the prevalence of diphtheria in its ordinary pharyngeal or laryngeal varieties. There may be long intervals in which not a single case comes to observation, or a number of such cases may present themselves almost simultaneously.

Another factor to increase the confusion is the lack of uniformity in the classification of diseases of the conjunctiva with formation of pseudo-membranes, by various authors. Some insist on making a more or less useless distinction between "croupous," or superficial, and "diphtheritic," or deep forms.

It is not surprising, then, that at Snellen's Clinic in Utrecht¹ the frequency of the deep form was equal to only 1/100 per cent of the total number of patients while Sydney Stephenson² reports 1¼ per cent to be the relative frequency in his observations which included both deep and superficial varieties. In our country, Bruns,³ at New Orleans, reports 8 cases among a total of 23,000 patients.

The uniuocular diphtheritis is as a rule quite rare and yet, at times, it seems to be the prevailing type. Vossius had 13 uniuocular cases in a total of 22. Sydney Stephenson says that in three-

fourths of his cases the disease involved only one eye. Wagner reports that uniocular cases predominate at the eye clinic in Giesen.¹

Prevalence of the uniocular affection indicates rather a mild type of the disease. Perhaps the general use of diphtheritic antitoxin may be given some credit in this connection.

At a glance our first case might be taken to be of the "croupous" type on account of the mildness of the ocular symptoms. The second case probably would be classed with the "diphtheritic" cases without question. Careful study, however, fails to reveal any essential difference in them.

There are no real and constant differences between the superficial and deep forms of pseudo-membranous inflammations of the conjunctiva upon which they can be separated, as two distinct clinical entities. Von Graefe took this position in his classical paper on "Conjunctivitis Diphtheritica" in 1854. He says it is not practical to make the superficial character of the membrane in some cases the basis for an independent "Krankheitsform."

Saemisch, in the first edition of the Graefe-Saemisch Handbuch der Augenheilkunde, 1876, endeavored to make this distinction. In the recent edition of this Handbuch he tries to maintain his position of 30 years ago, but he admits that from an ætiological standpoint no such classification can be justified. He further states that one form may change to the other and that both, croupous and diphtheritic, types may be present at the same time in the same case.

We need go no further for good reasons to accept the simple and more logical classification of all this class of cases under the one head of diphtheritic conjunctivitis, as it is made by Haab,⁴ Morax,⁵ Axenfeld,⁶ Fuchs⁷ and others.

Case 1. June 29, 1907.—James W., white, age 13 months.

Has been sick about a week with looseness of the bowels. Last three or four days mouth has been "sore." About the same time the left eye became inflamed and discharged some "matter." For last two days does not open left eye; seems to have "something in it." Parents consulted a neighboring physician who directed treatment for the enteric condition, which was taken to be the cause of the fever and sore mouth, and referred them to me for treatment of the left eye.

On inspection, O. S. closed and lids moderately swollen. Small amount of secretion at inner angle. On separating lids, eye is not visible. Entire papebral fissure filled with white mass of pseudo-membrane attached to the under surface of upper and lower lids. With a little manipulation of lids this entire mass was detached, leav-

ing denuded, oozing spots on palpebral conjunctiva, but showing cornea and ocular conjunctiva to be free from disease.

Smears were made from the secretion adhering to this membranous mass and showed a few typical Klebs-Loeffler bacilli, yet hardly in sufficient numbers to warrant certainty as to their ætiological relation. They might have been Xerosis bacilli.

The mouth showed small discrete white patches on tongue and palate of striking similarity to ordinary "thrush."

Smears made from these patches—small particles being detached for the purpose—did not show the spores or mycelia of a fungoid growth. There was present, however, a short thick bacillus (length 1.25 to 1.5 micron, width .75 micron). It seemed to grow easily on an Agar tube; was gram positive. Its identity remained uncertain.

No growth was obtained on the Agar tubes inoculated from the

ST. LOUIS CITY HOSPITAL.

Temperature, Pulse and Respiration Chart.

No.

Name _____

Jas. W.

Div.

Ward

Bed

Div.

Ward

Bed

	DAY OF DISEASE	MONTH	DAY	TIME TAKEN	PULSE	RESP.
<u>Admitted 1 a.m.</u> <u>sponge bath</u> <u>Temp for rectum</u>	5	June	30	A.M.	144	38
				P.M.	120	32
	6	July	1	A.M.	140	36
				P.M.	150	36
	7		2	A.M.	150	30
				P.M.	140	36
	8		3	A.M.	160	36
				P.M.	152	32
	9		4	A.M.	132	38
				P.M.	140	30
	10		5	A.M.	150	26
				P.M.	132	24
	11		6	A.M.	140	28
				P.M.	130	24
	12		7	A.M.	124	24
				P.M.	126	24
	13		8	A.M.	136	24
				P.M.	120	22
	14		9	A.M.	142	24
				P.M.	120	30
	15		10	A.M.	140	30
				P.M.	126	24
	16		11	A.M.	130	28
				P.M.	112	22
	17		12	A.M.	120	26
				P.M.	114	22
				P.M.	114	28

conjunctival sac. The proper isolation and care of the case being out of question at home, the child was sent to the City Hospital.

The conjunctiva of the left upper eye-lid now showed a dirty greyish membrane which resisted all manipulation of the lids. Thus it differed from the first membrane, which was easily detached.

The accompanying temperature chart, on which are noted the dates and amount of each injection of the antitoxin, indicates in a general way the progress of the case. [See preceding page.]

Case remained in hospital until July 31st, but temperature record is without interest.

The following notes by the physician in charge are of more or less interest:

July 6th.—Diphtheria positive; mouth, pharynx, nose, and left eye covered with membrane. Very resistant to antitoxin.—B.

July 13th.—Membrane disappearing and general condition seems improved.—B.

July 20th.—Membranes have entirely disappeared from all surfaces except the left eye. Cultures from throat negative.—B.

July 24th.—Patient has developed gastroenteritis. Cultures from mouth and eye negative.—B.

July 31.—Patient still has some membrane in left eye. Gradually recovering from gastroenteritis. Stools less frequent and of better character.

Discharged by request.—B.

The following list of reports from the City Bacteriologist is attached to the hospital records:

July 1st, Diphtheria bacillus, negative.

July 2nd, Diphtheria bacillus, positive.

July 3rd, Diphtheria bacilli, positive.

July 21st, Diphtheria bacillus, positive.

July 24th, Diphtheria bacillus, negative.

Case No. 2 was reported by Dr. Edw. H. Higbee at the October meeting of the Ophthalmic Section of the St. Louis Medical Society. Dr. Higbee has kindly sent me the following notes on his case:

On June 20th, 1907, Ella O'D., a child seven years old, came to me at the St. John's Hospital General Eye Clinic. As she entered the same, the appearance of the left eye was that of a purulent ophthalmia. On examining her closer and trying to remove what appeared to be purulent secretion, I discovered that instead of secretion, it was an adherent membrane, in the center of which there was a small hole through which I could see the eye-ball was movable, showing that the membrane was attached only to the palpebral portion of the conjunctiva. I immediately suspected diphtheritic conjunctivitis. The child had a temperature of 102.4 and I immediately ordered 3,000 units of antitoxin. On the second day the temperature was 101.5, but no change in the membrane. In view of these facts and that a sister of the patient had developed laryngeal diphtheria, 4,000 units more were given. On the third day the membrane was detached and cultures made, these cultures were positive. About this time a small ulcer was found on the cornea, this was treated antiseptically.

On the fifth day the child still had a temperature of 101.4 and 3,000 units more of antitoxin were given. On the sixth day cultures were made which were still positive. On the eighth day the culture was negative, and from this time on the child made practically an uneventful recovery, a small scar in the cornea remaining where the ulcer had been.

Practically these reports are interesting because they show the value of the antitoxic serum for diphtheria of the conjunctiva.

In each case there was a prompt reduction in the temperature.

In the first case the cornea remained free from any lesion and the conjunctival inflammation showed steady improvement under simple cleansing applications locally, added to the injections of antitoxin. If the injection of antitoxin had been continued at intervals of four or five days perhaps the membrane on the left eye-lid could have been completely cleared away before the case passed from observation.

In Dr. Higbee's case the result from the use of antitoxin was all that could be desired. The small corneal lesion did not go on to the destruction of the entire cornea, but healed, leaving only a small scar.

It is of interest that in each case the diagnosis was made from the eye before the disease had shown its clinical uniformity with ordinary diphtheria by involving, as it did, in the first case, the mouth, nose, and pharynx of the patient himself, and in the second case, by preceding an attack of laryngeal diphtheria in the patient's sister. The appearance, similar to thrush, in the mouth of the first patient had nothing suggestive to diphtheria, but the ocular manifestations were typical, and gave the clue.

We may also note that a single negative report from the bacteriological examination is not conclusive.

In the second case the negative report was accompanied by a disappearance of all clinical symptoms of the disease. This is not true in the first case. Five weeks after the beginning of the trouble membrane was still present on the upper left eye-lid. Though this is unusual, there are cases on record where the formation of a pseudo-membrane on the conjunctiva has persisted for months and even years.

The disappearance of the first case to some unknown locality with a diphtheritic process still active in the left upper eye-lid makes it of interest to refer to a case reported by Howe,⁴—mentioned in the Graefe-Saemisch Handbuch,—of a child of 10 years who had suffered for 8 months with a membranous conjunctivitis involving the upper eye-lid. This child was the source of

infection to whom were traced two cases of pharyngeal diphtheria ending fatally, and another case of ocular diphtheria of the same chronic character, but which resulted in blindness during an intercurrent attack of scarlatina.

There can be no question of the importance of following up such cases for some time even after an apparent cure; but it will require honest and intelligent co-operation between physician and patient. To expect this in all cases is probably an Utopian dream.

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OCULAR ANÆSTHESIA BY ALYPIN.

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Everyone who has made extensive use of cocain in eye work has been able to appreciate its great value as a local anæsthetic. In fact, it is not too much to say that Koller's discovery of its anæsthetic properties is to be regarded as marking an important epoch in the history of ophthalmology. As time went on, however, it was found that like other drugs cocain possessed some disagreeable features which frequently rendered its use undesirable. Cases of toxic effect from its application have been repeatedly reported, although in the comparatively weak solutions and amounts in which it is employed in ophthalmic work poisoning need rarely be feared. There are some persons, however, who present an idiosyncrasy toward cocain even in small quantities and no matter how applied, and here we must ever be on our guard against unpleasant effects.

A much more objectionable feature of cocain is its drying effect upon the cornea and particularly its destructive influence upon the corneal epithelium in certain cases. This makes it unfit for use especially in those cases of corneal ulceration in which we so often desire to employ a local anæsthetic to permit of cur-etting and cauterization of the ulcers. Patients with normal eyes in which we avail ourselves of the anæsthetic action of cocain for the removal of foreign bodies not infrequently complain of

the prolonged mydriasis which follows its use and which occasionally interferes with their work for a number of hours.

The paralysis of accommodation produced by cocain is sometimes an undesirable feature in its use, as is also the increase of intraocular tension.

It is for these reasons that the discovery of the various new local anæsthetics which have aimed to replace cocain has attracted much interest. While it can be said that none of them can be considered as substitutes for cocain in every respect, they are more or less free from its disadvantages. Among the latest of these is alypin, which has been made the subject of extensive experiments by ophthalmologists, so that it is possible to form a clear idea of its merits as compared with cocain. From the considerable literature that has been published, it would appear that it is practically identical in efficiency with the latter and has certain advantages which give it preference in many cases. In the solutions ordinarily used it is said not to dilate the pupil nor interfere with the accommodation, and to be free to a great extent from the drying effect of cocain upon the corneal epithelium.

I have used alypin in a varied number of cases, many of which were children, in which the greatest insensibility of the field of operation is essential, and adults in which the absence of the dilatation of the pupil and interference with the accommodation have an important commercial significance.

I have made a number of tests to determine the rapidity with which surface anæsthesia has been obtained with alypin, and its duration. In making these tests I have invariably used a 4 per cent solution varying from the freshly prepared to one a week old. No special preservative precautions were taken, and the anæsthesia was accomplished by dropping the solution into the conjunctival sac, and the sensibility determined by brushing with a whisp of cotton. The average time necessary has been 25 seconds, and an average of one minute permitted the removal of sharp foreign bodies firmly imbedded in the cornea. In the case of C. L. B., aged 40, the curetting of a central ulcer of the right cornea was accomplished one and one-half minutes after instillation. In two cases, C. M., aged 22, with an infected ulcer of the left cornea, and H. W. B., aged 30, with a marginal ulcer of the right cornea, cauterization with pure carbolic acid was done in one and one-half minutes after instillation. In two cases, those of L. B., aged 38, and G. E. F., aged 35, slitting of the canaliculus was carried out painlessly two minutes after the injection of a 4 per cent solution to the duct with a fine Anel syringe.

The penetration of alypin anæsthesia into the deeper structures was emphasized in cases of chalazion and trachoma. My method of procedure for the extirpation of chalazion has been to instill a 4 per cent solution into the conjunctival sac, apply the clamp and then hypodermically inject a 4 per cent solution beneath the skin. This method, particularly in five cases, those of M. S. H., aged 30; F. B., aged 38; J. A., aged 12; C. F., aged 65, and B. W. H., aged 30 (in whom the sac burst and had to be curetted out), entirely prevented any sensation.

In cases of trachoma I have rubbed a 4 per cent solution into the conjunctiva with a piece of cotton on the end of a toothpick, and in the following cases, the youth of some of which is to be marked, J. A., aged 11; J. B., aged 9; S. G., aged 8; M. I., aged 6; C. K., aged 9; I. Z., aged 7; W. W. L., aged 30; A. M., aged 11; L. S., aged 13, and M. Z., aged 13, I was enabled to squeeze the follicles after the Knapp roller forceps method with comparatively little resistance on the part of the patients. And again in tenotomies for strabismus the following patients were operated upon with as much freedom under the local anæsthesia produced by repeated instillations of a 4 per cent solution as if general anæsthesia had been employed: E. A., aged 7; E. B., aged 4; T. D., aged 18; K. McC., aged 7; J. C., aged 6; her sister, R. C., aged 7½, and their brother, J. C., aged 9½ years. In three cases, those of C. H., aged 28; M. C., aged 30, and G. M., aged 24 years, a tenotomy with advancement of the opposing muscles was accomplished with the usual absence of sensibility.

In these cases of trachoma and strabismus operations the safety of local over general anæsthesia offers no comparison, but a contrast.

In one case of cataract operation in the left eye, that of F. F., aged 73, a 4 per cent alypin solution gave perfect results.

In the case of M. T., aged 18, a highly nervous society lady, I removed a melanoma from the left lower lid, the operation lasting 25 minutes. There was not the slightest trace of sensibility, the anæsthesia being produced by the injection of a 4 per cent alypin solution.

In conclusion I would say that these cases demonstrate that alypin is a local anæsthetic which is quite permanent in solution, prompt in its action and lasting in its effects, without any of the annoyances of mydriasis or accommodative interference, not giving rise to considerable irritation or damage of the corneal epithelium and permitting us to dispense with general anæsthesia in many cases.

THE CALMETTE SERUM REACTION IN OPHTHALMOLOGY.

BY SYDNEY STEPHENSON, M.B., C.M.

It would be a truism to say that our ordinary methods of clinical examination not infrequently leave us in doubt as to whether a patient is or is not affected with tuberculosis, dormant or otherwise. This is especially apt to be the case when tuberculous foci exist in the bronchial or mesenteric glands. The injection of tuberculin is undoubtedly of service in the recognition of these conditions. Its use, however, implies confinement to bed or to the hospital ward, the careful taking at frequent intervals of the patient's temperature, systematic records of weight, and, last but not least, the methodical determination of the opsonic index. These requirements stand in the way of the everyday use of tuberculin as a diagnostic agent.

In June last Dr. A. Calmette¹ announced a new method of diagnosing tubercle of almost incredible simplicity. His plan was to place a drop of a 1 per cent watery solution of dried tuberculin in the eye of the patient. In the case of healthy subjects the result of the application was *nil*. On the other hand, the tuberculous subject showed a local reaction, now widely known as the "ophthalmo-reaction of Calmette." From the third hour onwards the eye to which the tuberculin had been applied became reddened, and in the course of several hours showed all the appearances of a more or less pronounced attack of acute muco-purulent inflammation of the conjunctiva. The maximum reaction was seen within six or seven hours after the application of the tuberculin. All traces of inflammation had disappeared within two or three days. The plan is free from danger, and causes the patient scarcely any discomfort.

Calmette's results have been confirmed by Prouff,² Grasset and Rimbaud,³ and other French and Swiss observers. Indeed, it can scarcely be doubted that the genius of Dr. Calmette has placed in our hands a most simple, trustworthy, and efficient means of recognizing the existence of tubercle in any part of a patient's body.

Now, apart from lesions of the eye recognized by all competent observers as tuberculous, there are several others—espe-

cially chronic iridocyclitis, scleritis, and some forms of choroiditis—of which the tuberculous origin is as loudly proclaimed by one school as it is decried by another. The preponderating part unquestionably played by syphilis in the production of many of these affections has, perhaps, tended to render some of us a little blind to the influence of other causes, prominent among which, as I believe, stands tuberculosis. How often do we meet with disseminated choroiditis, indistinguishable by the ophthalmoscope from the form due to syphilis, in patients in whom there is no evidence whatever of a specific taint, acquired or inherited. I feel tolerably confident that the systematic employment of the ophthalmo-reaction will show that no small number of such non-syphilitic cases are in reality due to tuberculosis.

Calmette's serum has already been used in eye work by Painblan,⁴ who obtained positive results in a couple of cases of tuberculosis of the conjunctiva. Brunetière⁵ had negative results in 3 cases, thought possibly to be of tuberculous origin—keratoiritis, interstitial keratitis, and exudative choroiditis. Aubaret and Lafon⁶ employed the serum in 18 eye cases, including intra-ocular tuberculosis, phlyctenular conjunctivitis, and keratitis, episcleritis, interstitial keratitis, lacrimal affections, and, lastly, optical papillitis. Brunetière,⁷ in the course of a second communication, while reaffirming the diagnostic value of the serum, regretted that it could not be applied to every doubtful case.

My personal experiences with the Calmette serum are far from complete, but up to the present time I have applied it to the eyes of upwards of thirty patients, all of whom were suffering from some disease or affection of the eye. The more important cases may be briefly described as follows:

1. *Phlyctenular (Eczematous) Conjunctivitis and Keratitis.*—The tuberculous origin of these common affections of the eye has been suspected for years, and the view is widely held at the present day that they are caused by a tuberculous toxin circulating in the blood stream. The Calmette serum was applied to the eyes of six children, all of whom had been affected with long-standing and relapsing ulceration of the cornea. Only two of the patients manifested tuberculous lesions elsewhere. The ophthalmo-reaction, however, was obtained in every instance. On the other hand, the result was negative once in a case of recent phlyctenular keratitis. It is to be noted that Aubaret and Lafon (*loco citato*) elicited the ophthalmo-reaction in 4 healed cases of phlyctenular disease.

2. *Choroiditis*.—The serum has been applied in 3 cases of choroiditis in young women, free, as far as could be ascertained, from evidences of syphilis, acquired or inherited. Two of the patients were single, and the third married. The choroiditis was bilateral in 2 and unilateral in 1 case. The choroidal lesions were of long standing. In Case No. 1 the gross disseminated choroiditis presented no ophthalmoscopic features whereby it could be differentiated from a syphilitic process. In Case No. 2 the changes affected almost exclusively the central region of the fundus. Case No. 3 showed in the central region of one fundus a map-like area of choroiditis, and while under observation a second area of disease made its appearance below the optic disc. Each eye was myopic to the extent of 3.5 D. In each of these three patients the ophthalmo-reaction was obtained, although in none had a tuberculous focus been found by clinical examination.

3. *Interstitial Keratitis*.—Of the 8 cases tested, 5 manifested obvious stigmata of inherited syphilis, and it is significant in them that the ophthalma-reaction was not elicited. On the contrary, in the remaining 3 cases positive results were forthcoming in all.

4. *Episcleritis*.—One case of episcleritis was tested, with positive reaction to the serum. The patient, a woman aged 19 years, showed two massive episcleritis patches, one above and the other below the right cornea. The fundi were normal. A suggestion of tuberculosis was given, by the fact that the cervical, inguinal, and axillary groups of glands were somewhat enlarged. Two other cases in women, aged 50 and 28 years respectively, yielded no reaction to tuberculin.

5. *Tubercle of Iris*.—A female, aged 12 years, was admitted to the North-Eastern Hospital for Children on August 2nd last suffering from a disabling affection of the left eye of nearly six months' duration. The anterior chamber of the left eye was almost filled with solid-looking, yellowish-grey exudation, so that the pupil could be recognized with difficulty. The eye was somewhat reddened, tension was slightly minus, and sight was equal only to counting the outspread fingers when held close to the child's face. No clinical signs either of tubercle or of syphilis. The state of the eye was so characteristic, however, that I did not hesitate to diagnose tuberculosis of the iris and ciliary body, of the form described in systematic treatises as "iritis scrofulosa" or "conglomerate tubercle." For that matter, the tuberculous nature of the process was attested by the general reaction that on two occasions followed the injection of 1/1000

mg. of tuberculin T.R. It was confirmed later by the action of the Calmette serum. On September 22nd, a drop of the liquid in question was instilled into the child's unaffected eye by Dr. R. A. Chisolm, resident medical officer of the hospital. A well-marked reaction came on in nine hours, and persisted for twenty hours.

6. *Tubercle of Cornea*.—A girl, aged 12 years, was seen by me on May 29th, 1907, with the history that her right eye had been more or less inflamed for about two months. The child's mother suffered from phthisis pulmonalis, and one of her brothers had died at 9 months "with lungs badly affected." The patient herself "had brought up blood" on one occasion. *On Admission*: Weight, 4st. 4lb.; temperature remittent; general examination, including x rays, negative. Right eye: Tension minus 1. Vision, fingers at 2 metres. Slight photophobia and patchy ciliary redness. Several curious looking deposits lay at different levels in the substance of the cornea, where they formed a kind of mosaic. Their color was greyish-white, and they might be compared with drops of cold mutton fat. In addition, the rest of the cornea was more or less hazy. No deposit, such as those on which great stress has recently been laid by Dr. Stock,⁸ could be recognized on the anterior surface of the iris. The pupil responded imperfectly to atrophine, which disclosed the existence of posterior synechiæ. Although a reflex could be obtained through the upper part of the pupil, yet no details of the fundus could be made out. *Provisional Diagnosis*: Tubercle of cornea, probably secondary to a similar condition of the iris and ciliary body. The injection of 1/1000 mg. of tuberculin T.R. on June 19th and 25th yielded no definite result, but a rise in temperature to 100.8°F. followed a third injection made on June 28th. On June 20th the cornea had cleared sufficiently to allow of an ophthalmoscopic examination of the fundus, when areas of yellowish-white exudation, probably of tuberculous nature, were found in the peripheral parts of the choroid. On September 21st, under treatment by injections of 1/1000 mg. of tuberculin T.R., sight had risen to 5/60. On the following day, serum was applied to the unaffected eye by Dr. Chisolm. A reaction was noted in five hours, and this had disappeared completely thirty-one hours after the serum had been used to the eye.

7. *Chronic Irido-Cyclitis*.—If there be one class of case more than another in which tuberculosis is believed to play a prominent role it is in insidious and recurrent irido-cyclitis in young adults. According to Stock's recent investigations,⁸ of 59 patients

suffering from chronic irido-cyclitis no fewer than 61 per cent showed a general reaction after the injection of Koch's older tuberculin, T.V. I have submitted two patients to the tuberculin test and obtained the ophthalmo-reaction in both. The essential facts follow: (a) G. B., aged 9 years, came under notice on January 14th, 1903, with the history that she had been treated at the North-Eastern Hospital for Children for four years on account of "tuberculous disease of the left knee." On examining her eyes, which were free from obvious evidences of inflammation, it was found that the right pupil was both "excluded" and "occluded" and that numerous posterior synechiæ were present in the left eye, as the result of irido-cyclitis which had wholly escaped the attention of the child's parents, who declared that the eyes had never been bloodshot. Patient, the eldest of three children, was well nourished, but she presented arthritis of the left knee and dactylitis of the left little finger. On February 23rd iridectomy upwards was performed on the right eye and nine days later upon the left eye. On June 18th, 1904, there was much pigmented keratitis punctata; right vision equalled perception of light, and left, fingers at 0.5 metre. From that time to the present the child has been subjected to slight attacks of redness of the eyes, sometimes associated with temporary hypopyon. The injection of 0.005 mg. of tuberculin T.R. on March 28th, 1907, was followed by no reaction, local or general. On May 2nd, 1907, the aqueous humor was withdrawn from the left anterior chamber, but bacteriological examination of the fluid was negative as regards the *Treponema pallidum* and the tubercle bacillus. On June 25th, 1907, the injection of 1/750 mg. of tuberculin T.R. was succeeded by a slight rise in temperature, together with pain at the site of the needle-prick. On September 23rd, a slight reaction was obtained nine hours after Dr. Chisolm had applied the Calmette serum to one eye. It had disappeared seventeen hours after the application. (b) Mrs. P., 35 years of age, consulted me on September 23rd last for a dullness of the sight of her right eye of fourteen days' duration. No recent illness. General health stated to be good. On examination, I found the right eye affected with a painless irido-cyclitis, the stress of the inflammation falling on the ciliary body, as evidenced by the symptoms, which included bad sight (6/60), punctate keratitis, and raised tension. The fundus could not be seen owing to the cloudy condition of the cornea. The other eye showed slight choroidal disturbance at the yellow spot, evidently of long stand-

ing. A sister of the present patient, aged 28 years, had been under my care nine years ago for unilateral irido-cyclitis, and during the course of the illness what was believed to be a tubercle of the choroid developed in the inflamed eye. A drop of the Calmette serum placed in Mrs. P.'s left eye on September 24th, produced in sixteen and three-quarter hours a feeling of stiffness and tenderness in the lids, and when she was seen twenty-three and a quarter hours after the application, the appearances were those of a rather marked acute catarrhal conjunctivitis. The reaction had not wholly subsided in four days.

The further history of the case was most instructive.

On September 28th the cornea had cleared enough to allow me to identify a tubercle of some size that lay in the choroid not far from the right optic disc below the superior temporal artery and vein. On the same day the anterior chamber of the left eye was tapped and the aqueous humor examined bacteriologically. Smears stained with carbol blue were found to contain few formed elements—merely pigment particles, together with a scanty number of endothelial cells and degenerated leucocytes. No bacteria could be recognized. Preparations treated by the Ziehl-Neelsen process, however, included a few slender rods stained red. A careful search was necessary before a single tubercle bacillus was found. The total number in all the preparations examined was extremely small.

In conclusion, it should be added that, according to Calmette, neither ordinary tuberculin nor Koch's older tuberculin (*Alt-tuberculin*) must be employed in the test, since their contained glycerine is apt to irritate the conjunctiva and thus to mask any proper reaction. Calmette advises 1 part of dried tuberculin, precipitated by alcohol, dissolved in 110 parts of sterilized water, and of this liquid he places one or two drops in the eye to be tested. The Pasteur Institute, Lille, France, prepares suitable tuberculin in two forms: (1) as dry tuberculin in small glass phials, to which the surgeon adds ten drops of water; and (2) as a solution in hermetically sealed glass tubes, each of which contains several drops of the product ready for immediate use. The price of neither preparation is prohibitive.

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—*British Med. Jr.*

MEETING OF THE BRITISH MEDICAL ASSOCIATION.

A DISCUSSION ON IRIDOCYCLITIS.

Opening Paper.

BY F. RICHARDSON CROSS, M.B.Lond., F.R.C.S.Eng.

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Surgeon, Bristol Eye Hospital.

Inside the ciliary muscle and between it and the epithelial layers which constitute the pars ciliaris retinae is a fine network of blood vessels supported by a fibrillar connective tissue. The main blood supply is from the circulus arteriosus major, which sends branches backward in the ciliary muscle towards the choroid, others forward to supply the iris and its vascular ring around the pupil, but the greater part of the blood passes into the ciliary processes, forming in them a plexus of fine capillaries, so that each process in the pars plicata is a blood reservoir somewhat like a glomerulus in the kidney. The pars nonplicata, on the contrary, is somewhat sparsely supplied with blood vessels.

While the chorio-capillaris of the choroid is placed between two impermeable layers—the internal (Bruch's layer) and the external limiting membrane—at the ciliary body these membranes disappear, and allow the capillaries to come into direct contact with the epithelial cells. The aqueous is secreted from the chorio-capillaris of the ciliary body by the intervention of these cells.

The ciliary veins are very numerous, nearly all of them empty towards the vasæ vorticosæ; a few twigs from the outer part of the ciliary region pierce the sclerotic, as the small "anterior veins," while others join the canal of Schlemm.

The blood vessels and other parts of the ciliary body are supported by a fibrillar connective tissue with which the iris is directly continuous, the two forming one structure. The anterior surface of the iris contains a number of crypts which open in the anterior chamber and are probably concerned with absorption rather than with secretion.

The inner wall of the ciliary body is known as the "pars ciliaris retinae." At the ora serrata the external pigment layer

of the retina (uvea) is carried on unaltered to cover the ciliary body and its processes, with their folds and lacunæ. But the rest of the retina is profoundly modified; the rods and cones and nerve elements somewhat suddenly disappear, while the connective tissue portion and limiting membranes become modified and give place to a layer of cylindrical epithelium, which lines the inner surface of the uvea and passes everywhere with it.

The surface provided for the secretion of the intraocular fluids is much increased by the arrangement of the ridges, folds, and undulations of the "pars plicata." Its area has been estimated at about 6 cm. (nearly $2\frac{1}{2}$ in.) square.

Though in animals below the mammalia there may be other sources for the aqueous and intraocular nutrient fluids: anatomical, experimental, and clinical evidence all go to show that in man and mammals the intraocular fluid is secreted from the ciliary processes, and that the other vascular structures in the eye take very little, if any, part in its production.

There is probably but little secretion from the anterior surface of the iris, its structure seems to resemble that of the "filtration angle," and it is essentially concerned with absorption.

Is the fluid from the ciliary processes merely a transudation (like lymph) solely due to simple *filtration* from the ciliary capillaries? Or is it a *secretion* from the epithelial cells? Leber thinks that the intraocular fluid is produced from the ciliary processes simply by filtration, and that the amount is determined by the difference in pressure between the blood in the capillaries and the fluid in the eyeball. Nicati believes that the aqueous is a *secretion* from the cells of the glandular epithelium of the pars ciliaris retinæ, and he names this the gland of the aqueous humor.

The blood pressure, intraocular pressure, and secretion of aqueous stand in a causal relationship to one another. A rise of intraocular pressure causes an increase in the amount of fluid secreted. The rate of absorption (or filtration) is also hastened by increase in the intraocular pressure. An increase of proteids in the intraocular fluid (thus hindered in its filtration) lessens the rate of absorption.

Treacher Collins believes that he has discovered special gland-like processes from the pigmentary layer in the epithelium best marked in the plicata at its junction with the "non-plicata" (Collins' glands).

When we consider the important functions of the ciliary body in the secretion of the aqueous, and of the nutrient fluids for

the vitreous and lens, we should expect a slight modification of the secretory process to occur from time to time. Evidence, however, in this direction by the presence of vitreous opacities is by no means common.

Sometimes we observe a fine haze in the anterior part of the vitreous just behind the lens, or dots or fine threads may be seen floating in it; such a condition is probably due to exudation from the ciliary vessels or Collins' glands. Any mild catarrh or hyperæmia of the ciliary body is likely to be accompanied by slight superficial synchysis; but unless the fibres of the vitreous body are structurally injured, such haze behind the lens is temporary, or so slight as to be unobserved.

Choroiditis is undoubtedly often associated with vitreous opacities, and should always be suspected when the synchysis is thick and dense. But on the other hand, very definite and widespread choroiditis may be present without any well-marked vitreous opacities, which, when present, are probably to a large extent dependent on implication of the ciliary body.

A. Serous cyclitis may consist merely of excessive secretion from the ciliary vessels, but, when more definite, it consists essentially of a catarrhal inflammation of the ciliary body and gland. There is congestion of the ciliary blood vessels, with circumcorneal hyperæmia, increase in the aqueous fluid; which becomes fibrinous, and may contain a few leucocytes, with pigment epithelium.

The more solid particles wash into the meshes of the filtration angle, and others are easily seen as punctate spots at the back of the cornea.

When the secretion is albuminous it does not readily exude, and it may distend the aqueous (aquo-capsulitis) and produce a form of glaucoma which needs paracentesis of the chamber. The iris becomes discolored, but few if any synechiæ are formed. Such cases subside without any deterioration of the sight, but like other catarrhs they have a tendency to relapses and recurrences, to a more or less definite extent. According to the control of the ciliary blood vessels or the condition of the blood we see *serous, catarrhal, hæmorrhagic, or plastic* exudations.

There is a form of slight iridocyclitis which has a great tendency to recur. If well treated years may pass without any permanent synechiæ being formed or any damage done to the eye or sight, after repeated attacks. In such a case each return of "cold in the eye" should be looked upon as an attack of "recurrent

iritis," and mydriatics should be used to stop the attack and prevent synechiæ which will otherwise form.

Another type of iridocyclitis in its progress closely resembles interstitial keratitis. A serious amount of mischief may be done to the eye, but it eventually results in a gradual and more or less complete recovery. These cases are essentially chronic and continuous, often binocular; the cornea is unaffected, excepting for the presence of K.P., though this may occasionally set up desemetitis and proliferation of the cells lining the aqueous chamber. There may be no peg teeth or other evidence of inherited syphilis.

B. Plastic Iridocyclitis.—When the inflammation is of a more active type, the hyperæmia is more intense, the eyeball is congested, and the conjunctiva swollen. The exudation is fibrinous and associated with the presence of leucocytes; it lines the surface of the ciliary body, passing forward among its processes and back along the pars nonplicata and retina. Multinuclear cells are seen on the surface of the iris, and they pass into the vitreous and aqueous fluids. A hypopyon may be chiefly cellular and fluid or fibrinous, according to the composition of the exudate. The leucocytes almost certainly come from the blood vessels of the ciliary body; they have migrated either through the epithelium of the pars ciliaris retinæ or have escaped more readily by damage in this membrane. The pigment cells may break up and pigment escapes. The exudation spreads in all directions, the leucocytes proliferate and form new cell material; new blood vessels are also formed. As the exudation continues to develop it forms layers; toward the ciliary body it tends to be fibrous; towards the vitreous cellular; and fibrinous between the two. Cell growth and proliferation is most active towards the vitreous. Leucocytes, lymphocytes, cells from the retinal epithelium, and large, free masses of protoplasm are formed in the fibrinous exudate. The connective tissue of the ciliary body is œdematous and densely crowded with multinuclear cells. The future progress of this exudation depends on the progress of the original irritation which has been its cause. If the irritant is removed, or if the inflammation ceases, the vessels will contract and existing diapedesis will be checked. But the exudate already existing can only be gradually modified. If it is small in amount it may be slowly absorbed; if large, the cellular portions towards the centre of the vitreous tend to degenerate and undergo fatty changes, which may be accompanied by softening of the vitreous humor.

Along the ciliary body, iris, and adjoining structures, fibroblasts develop from the fixed connective tissue cells and invade the exudate. The fibrous tissue increases, forming cicatricial bands or membranes which will affect the eyeball in various ways, according to their relationships. The lens may be bound down behind by lymph and cyclitic membranes, or in front by synechiæ. The ciliary body may be dragged away from the sclerotic, or the retina towards the lens, with more or less implication of the pupil, or even complete obliteration of the posterior chamber. Degeneration of the ciliary body and vitreous with shrinking of the globe may follow, and if there is no pain and has been no external wound or lesion of the eyeball, it may usually be safely left alone.

The tension in iridocyclitis is variable. The ciliary body presides over the nutrition of the eyeball, and affections of it are usually associated with diminished tension. During inflammation, however, the tension may be raised (*a*) by the increased blood flow through the arteries and the engorgement of the veins, (*b*) by the increase in the secretion of intraocular fluid and by the difficulty in its escape at the filtration angle by reason of its albuminous nature. When there is a free escape for the secreted fluid or when the amount of secretion is diminished the tension again becomes reduced. The usual conditions that predispose to glaucoma act during an attack of iridocyclitis, and the most important are the conditions of the filtration angle and the nature of the exudate.

C. After injuries to the eye or in patients in a very low state of health, the inflammation may be acute and the exudation *purulent*. Micrococci and polymorphonuclear leucocytes are in great excess, the epithelial layers are destroyed, and the pigment cells proliferate. Hypopyon is usually present; prognosis is very serious, for panophthalmitis usually results.

We have a typical picture of iridocyclitis in "sympathetic ophthalmia." It is generally subacute in character, with lacrimation, impairment of accommodation, injection of the anterior ciliary arteries, haze in the aqueous, sluggish pupil, circumorbital pain, and tenderness of the ciliary region. The exudation passes into the vitreous humor, it discolors the front of the iris, causes swelling of the stroma, produces synechiæ at the pupil, or causes retraction of the root of the iris by gumming it to the ciliary processes. There is always "cornea punctata," sometimes hypopyon.

CAUSATION.

Iridocyclitis is usually the effect of constitutional dyscrasia depending on organisms, an incident in a general infection rather than a disease, a blood poisoning associated with syphilis, inherited and acquired; in rheumatic fever it is rare; in gonorrhœal rheumatism not uncommon. In rheumatoid arthritis an infective disease due to micro-organisms in the joints, scleritis and insidious iridocyclitis are fairly frequent. Attacks of mild iritis often occur in indefinite rheumatoid, rheumatic, or gouty conditions. Iridocyclitis may complicate the retinitis of albuminuria or diabetes, or may occasionally anticipate retinitis in these diseases, it may complicate the toxic poisoning of gastro-intestinal or vaginal inflammations, or it may be caused by "pyorrhœa alveolaris" or sepsis in the nose or accessory cavities.

Mumps and typhoid fever have been complicated by iridocyclitis. Typhoid bacilli have been found in the aqueous humor. Iritis may complicate septicæmia; cardiac and vascular disease may cause it; and a few cases have been reported of "cornea punctata" with tachycardia. Anæmic women seem specially predisposed to recurrent painless iritis.

Iridocyclitis thus appears to be essentially an endo-infection, depending probably on microbes. But the effect of cold, slight injuries to the predisposed eye, ocular fatigue from overwork, or light may be the exciting causes.

Lastly, as a cause of iridocyclitis, must be mentioned *wounds*, which in the ciliary region, or "dangerous zone," are liable to be followed at a longer or shorter period by a sympathetic cyclitis of the fellow eye. The progress of a wound in the eyeball will depend partly on the mechanical injury inflicted and partly upon the infection of the wound by septic organisms.

TREATMENT OF IRIDOCYCLITIS.

A wounded eye must be thoroughly disinfected by repeated antiseptic washings; foreign particles must be removed, with any crushed or infiltrated edges of tissue; application of the cautery may be sometimes advisable. Thorough asepsis is of the first importance; a stitch or two may be thought advisable, but no deleterious substance must be sewn in. In all cases of iridocyclitis there must be *rest* of the eye and of the patient; relief from pain, if necessary by the free administration of morphine.

Can any special protection be applied against the action of micro-organisms or of the toxins they produce? The nutrient

humor has some inhibitory power which it derives from the blood serum—subconjunctival injection of a 4 per cent sterilized salt solution increases this antitoxin effect, and seems to aid the escape of the anti-bodies from the blood serum; recently sterilized air has been injected under the conjunctiva, 1 to 2 c.cm. as a dose. Sublimate and oxycyanide of mercury 1/2000 have proved useful as antiseptic injections.

The local blood pressure will be relieved by use of leeches on the eyelids, and by the administration of a hydragogue purge. The application of *heat (dry or damp)* is always comforting. The use of a *mydriatic is essential*. A quite moderate iritis may block the pupil and prevent the escape of fluid from the posterior to the anterior chamber. But besides dilating the pupil, atropine tends to constrict the blood vessels and lessens the exudation from them. The increase of tension due to exudation may be at once relieved by it, or in its place hyoscine hydrobromate may be used. Dionine is often of great service in relieving pain and the vascular overdistension.

There is no sound reason for the use of myotics in iritis or iridocyclitis, even when the tension is high, for this is not due to narrowing of the filtration angle, but to its engorgement from the imperfect diffusion of the albuminous exudate—one or two applications of eserine or pilocarpin may occasionally be of service, but if continued they will only increase the vascularity and secretion, and will encourage the formation of synechiæ. If the tension continues the aqueous chamber should be tapped by a wide sclerotomy; this will relieve the pressure, give escape to the albuminous exudation, will for some days give good drainage, and allow of the free use of atropin.

Paracentesis of the anterior chamber during health encourages the flow of antibactericidal substances from the normal blood into the aqueous, but they soon disappear; during inflammation it is of service in this way, and also because it allows of the escape of bacteria and toxins and of unhealthy secretions, while at the same time it improves the local conditions of the blood, as well as the power of its circulation. It may be beneficial even when tension is subnormal, and if there is much congestion and exudation it may be of great service, and can be repeated without fear of danger. Iridorrhesis, tearing of the synechiæ with a spud, may occasionally be associated with paracentesis.

Iridectomy frequently becomes necessary, but it should not be done during the acute attack if it can be avoided; most of the

urgent conditions can be met by paracentesis which may be repeated if required.

Occasionally occlusion of the pupil, or other complication may seem to render it necessary, but fresh exudation is liable to refill the coloboma, or the vitality of the eye may be more lowered by the operation, and may tend to softening and shrinkage.

When the eye is quiet after an attack, iridectomy should be done, if the pupil is becoming tied by multiple synechiæ, and particularly if it has become *excluded* with or without the complication of iris bombée.

Operation is necessary for high tension, but it may be occasionally beneficial when the tension is subnormal, particularly when there is haze or floating opacities in the vitreous humor, for these are caused by an unhealthy condition of the ciliary body, which the operation may improve.

Complete posterior synechiæ will make the operation difficult, but even so the front of the iris can usually be removed, leaving the uvea in contact with the front of the lens and the posterior chamber opened up.

I frankly admit the great value of iridectomy in lessening the attacks, or even in arresting the disease in certain cases. But is not our application of it somewhat empirical, based upon bare practice? It is often recommended as a panacea. But a large experience shows its effects to be very disappointing in many of the cases.

If a case of iridocyclitis is a local manifestation of the faulty blood condition in a general disease, treatment must be directed to this primary cause of the eye affection, and it is of first importance that an accurate diagnosis in this direction should be made, so that a sound prognosis can be given and the appropriate remedies applied without delay. Every consideration for the general health, and particularly of the intestinal tract, which often requires purgatives and antiseptics, is desirable. Encouragement of elimination by the skin by Turkish or other baths, and the exhibition of drugs suitable to the case, and particularly of mercury when causation seems uncertain, give the main lines of treatment.

DISCUSSION.

Mr. Holmes Spicer (London) said he would like to ask Mr. Cross for his definition of the term "strumous"; whether he intended it to mean tuberculous or not; because if not, its use ap-

peared to him vague and unsatisfactory. With regard to the so-called rheumatic cases of iridocyclitis, Mr. Holmes Spicer had seen some cases of rheumatic iritis produced by the injection of the rheumatic streptococcus, but the appearance of the iris was very different from any form of rheumatic iritis that we were familiar with. There were large suppurating nodules on the iris discharging pus into the anterior chamber, and seemed to be more pyæmic than rheumatic. As to operations, he was not disposed to operate on these cases; his experience was that the iridectomy coloboma generally closed again; but he believed that iridectomy in recurrent iritis was most valuable as a preventive and curative agent. He thought that eserine was to be avoided in all these cases.

Mr. Herbert Parsons (London) confined himself to the discussion of the pathology, ætiology, and treatment of the disease. He briefly described the normal conditions of lymph supply in the eye and the functions of the ciliary body in the process of secretion. He pointed out that the conditions of secretion were not inconsistent with a theory of simple filtration, but he did not deny the probability of factors which could not be explained upon a purely mechanical theory. The resemblance of the ciliary processes to the glomeruli of the kidney was striking in this relationship, and chronic cyclitis had many points of similarity to chronic nephritis. Subacute and chronic iridocyclitis must be regarded as essentially toxic in origin, and the problem was to discover the source of the toxæmia. Syphilis was a common cause. Oral sepsis, especially pyorrhœa alveolaris, might be accepted as a fully-established cause. Sometimes the nasal passages or sinuses were the seat of septic mischief. More commonly the generative organs were at fault, and the frequency of uterine disorders probably accounted largely for the greater prevalence of the disease in women. Perhaps the most important cause of all was toxæmia of intestinal origin, which must also be taken into account in considering the sex incidence. Enterogenous toxæmia was difficult of proof, and further research on the subject was much needed. He would commend the suggestion made to him by his colleague, Mr. Percy Flemming, to test the opsonic reaction of these patients against *Bacterium coli*. Finally, the possibility of the existence of specific cyclotoxins must be borne in mind. Rational treatment must be founded upon the views of ætiology already expressed. Any source of sepsis or other cause of toxæmia must be sought out and attacked. In the ab-

sence of oral, nasal, or uterine disorder it was advisable to attend to the cleansing of the intestinal tract. Calomel was the most important agent in this respect, and he recommended that it should be followed up by intestinal antiseptics, for example, naphthol, guaiacol carbonate, etc. He believed that the good sometimes resulting from the use of salicylates was often due to this effect. As regards local treatment, in addition to the usual remedies, he had had some remarkably good results with dionin, precipitates on the back of the cornea ("k.p.") clearing up in a quite unexpected manner. Subconjunctival injections of saline might be used. He deprecated paracentesis except in those comparatively rare cases in which the intraocular tension was extremely high; it was wrong on theoretical grounds and proved relatively unsatisfactory in practice. It was his custom in cases which resisted treatment to place the patient under a prolonged and energetic course of hot baths; diaphoresis with pilocarpin, mercurial inunctions, potassium iodide by the mouth, etc.

Mr. Roper (Exeter) said that he would wait for a very long time—from six to twelve months—before making an artificial pupil. He considered that enough stress had not been laid on the effects of the free exhibition of mercury, preferably by inunction, and said that he had been favorably impressed by the action, both on the local condition and on the nutrition of the patient, of iodipin.

Dr. Hern said: I would like to ask Mr. Cross how he treats his sympathetic cases of this disease. I seldom do an iridectomy in these cases, for unfortunately softening of the eyeball and blindness follows the worst cases, whether iridectomized or not, and, as has been mentioned by more than one speaker to-day, the coloboma becomes filled up, and the last condition is worse than the first.

Mr. Devereux Marshall (London) said he quite agreed with Mr. Richardson Cross as to the use of atropine and, if necessary, paracentesis. He thought that eserine always did harm, no matter what the tension was.

Dr. Reber (Philadelphia) said: In the States I think the disposition is to look upon iridocyclitis as the local expression of a general disease. As ophthalmic surgeons, we are prone to look too much upon the local disorder to the neglect of the constitutional condition. Particularly is this true among our younger men, who are rushing into ophthalmic practice with scarcely any general medical or surgical experience. It is our practice to look

upon all such patients as the subjects of very defective elimination as evidenced by acetonuria and indicanuria. They are therefore briskly purged by a course of calomel, and the mercurial effect then continued by other means. Gastric intolerance we do not see much. If met with, the patients are sweated heavily, when their gastric tolerance is generally re-established. Syr. hydriodic acid is usually gratefully accepted by such patients. Subconjunctival injections are of little, if any, value in rheumatic iritis, but in the quiescent stages of the proliferative form of the disease are often distinctly helpful. In these conditions (assisted by dionin) much exudate may thus be cleared away. It is with extreme hesitation that I go counter to the experience of such authorities as Professor Landolt and Mr. Spicer. But in the later stages of obliterative iridocyclitis or uveitis, the patient ought to be given every chance, and if such cases are iridectomized, and this later persistently followed up by dionin and subconjunctival injection locally (and prolonged mercury internally), I believe we are then giving the patient every chance we can.

Colonel Herbert referred to plague as a common cause of very distinctive iridocyclitis in India. Maynard had described cases some years ago. In most cases rapid disorganization of the eye occurred without violent reaction. And the atrophy which ensued was marked by extreme shrinkage of the cornea, and usually by perforation of the sclerotic in the ciliary region. In the treatment of infective iridocyclitis, after operation Colonel Herbert had received great help from mercury by inunction and otherwise, sufficient rapidly to produce slight salivation. As regards iridocyclitis with high tension, the majority of these cases present visible exudation in the anterior chamber, and one properly performed tapping usually reduced the tension permanently. This might be done subconjunctivally in out-patients by a very narrow Graefe's knife thrust across the periphery of the anterior chamber. The counter-puncture was made subconjunctival by twisting the blade as the point came slowly through, to allow of leakage of aqueous under the conjunctiva. Difficulty as regards treatment was experienced in cases where the predisposition to glaucoma was marked in old people with shallow chambers, and where sometimes the degree of iridocyclitis was very slight. The cases were not far removed from primary subacute glaucoma.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.,

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INVOLVEMENT OF THE CORNEA AND BULBAR CONJUNCTIVA IN THE SECONDARY STAGE OF SYPHILIS.

Brown Pusey (*Jour. A. M. A.*, Sept. 1) calls attention to the rarity of the involvement of either the cornea or ocular conjunctiva during the secondary stage of syphilis. He has taken considerable trouble to look up the literature on the subject and could find no record of any case in which the cornea was involved, while he was able to find but twenty-seven cases recorded of secondary syphilides of the bulbar conjunctiva. He reports a case involving both cornea and conjunctiva in a male porter, twenty-two years of age. The conjunctivæ of the lids and globes of both eyes were affected, there being several pustules on the ocular conjunctiva and three on the margin of the lid of the left eye, while in the right eye there was one large pustule near the limbus at the outer side, three on the margin of the lid and one a little above the center of the cornea.

The pustules varied in size from 1.5 mm. in diameter of the one on the cornea to 3 or 4 mm. in diameter of those at the margin of the lid. They were covered with a yellowish exudate and the floor had rather sharply defined edges. The blood-vessels at the limbus of the right eye were engorged and the conjunctiva of both eyes was markedly hyperæmic. Lacrimation and photophobia were present. Under energetic mixed treatment, with proper local remedies, the condition improved rapidly and in two weeks the eyes were entirely quiet.—(*Brit. Med. Jr.*)

CURE OF IRITIS, IRIDOCYCLITIS AND BLENNORRHEA NEONATORUM.

V. Kukala (*Muenchener Medizinische Wochenschrift*, Oct. 7) uses a 2 to 4 per cent solution of atropin to dilate the pupil. Once daily, after instilling a 5 to 15 per cent solution of cocain, he wipes out the conjunctival sac with a swab of cotton dipped in a 1 to 4,000 of corrosive sublimate, following this with an instillation of the atropin solution. He believes the sublimate has

a specific action in these cases and details several cases to illustrate its value. In ophthalmia neonatorum he applies a 4 or even 5 per cent solution of silver nitrate to the everted lids with a cotton wad held with forceps, repeating it twice daily. He thinks dropping the silver solution into the conjunctival sac does no good in severe cases, but only wastes precious time.

OCULAR NEURASTHENIA.

Hiram Woods (*Jour. A. M. A.*, July 20) summarizes his most instructive and suggestive article thus:

"Fatigue symptoms, unrelieved by refraction correction, and often associated with the so-called hysterical accommodation, may be due to special susceptibility of the eyes to outside irritation, either physical or psychical. These cases may be classified as ocular neurasthenics, though they seldom, at least in the stage when they come under the oculist's care, present symptoms of general neurasthenia. They occur usually among industrious people. It is easy to dismiss them with a diagnosis of hysteria, but more thorough search for cause or subsequent development reveals an underlying condition capable of producing an objective ocular lesion, but at the time producing symptoms which, for want of a better term, must be termed 'irritative.' Among these causes are unsuspected syphilis, intestinal disorders, hemic and nutritive troubles, pelvic anomalies and functional and psychic influences. The symptoms which should lead the examiner to look for such remote conditions are absence of ocular explanation for the symptoms or persistence of the latter, after ocular abnormalities have been corrected; 'hysterical accommodations;' varying refractive state. There are certain ocular troubles which usually cause little or no annoyance but which may direct a neurasthenic tendency eyeward. Relief of these somewhat lessens susceptibility, but only discovery of the underlying cause, with its medicinal or surgical treatment, cures. The aid of workers in other medical fields is often essential to correct diagnosis. Diagnosis of ocular hysteria, with its unsatisfactory treatment, is justifiable only after careful search for remote causes has given negative results."

He states as follows what seems to him to be adequate search for ocular cause of fatigue symptoms:

"1. The manifest refraction state should be determined by subjective tests, with range of accommodation and muscular balance. Should the latter be faulty its sthenic or asthenic quality

should be determined. Comparison of this with the subjective refractive condition gives us an idea of the conditions under which the patient is working with fatigue symptoms. This comparison often affords an explanation, impossible if the two factors are studied separately.

"2. Determination of objective refraction under complete cycloplegia, unless the age of the patient contraindicates the use of a mydriatic.

"3. This should correspond with the objective findings, and when it does not the reason will usually be found in unaccountably incomplete cycloplegia.

"4. Subjective tests after the ciliary muscle has regained its activity. Accommodative range and muscular balance are often different from the states found during the fatigue period, and are essential guides in determining what proportion of a total error should be corrected. These principles are well recognized, but I incline to the opinion that, especially in the use of a cycloplegic, and determination of accommodation and muscular balance after ciliary muscle has regained activity, they are often neglected."

THE SURGICAL TREATMENT OF GLAUCOMA.

James Moores Ball (*Jour. Mo. State Med. Ass.*, October, 1907) divides the operative procedures in the treatment of glaucoma into ocular and extraocular ones. Of the ocular operations he discusses: 1, Iridectomy; 2, Hancock's operation; and 3, Sclerotomy. He considers iridectomy "the best and most useful procedure in the treatment of glaucoma." While its greatest field of usefulness is in the acute inflammatory type, still he thinks it should be done in all forms of idiopathic glaucoma. Believing that the prolonged use of miotics in glaucoma simplex is a loss of valuable time, he has for years performed iridectomy on nearly all cases of this class coming under his care and finds that fully 60 per cent of them have retained useful vision. He urges the importance of doing the operation under a general anesthetic, preferably chloroform, in order that a correct iridectomy for glaucoma may be performed. The incision is made with the keratome 1 to 2 mm. back of the corneo-scleral junction, he believing that the size of the piece of iris removed is of less importance than the site of the incision.

Hancock's operation, which is a sectioning of the ciliary muscle, is quickly done under local anæsthesia and instantly relieves the pain and increased tension. The author has gotten very

good results from this operation and thinks it has a distinct place in the treatment of glaucoma. In absolute glaucoma, he has several times given relief from the pain by it, thus avoiding enucleation.

Sclerotomy may be done anterior to the iris or posterior. His experience has not been favorable to this operation, but he sometimes does it several days previous to performing iridectomies which would otherwise be very difficult to do.

The only extraocular operation for glaucoma is the removing of the superior cervical sympathetic ganglion. Ball was the first to perform this operation on this side of the Atlantic, about eight years ago. The exact value of the procedure has yet to be established, but to get the best results both superior cervical ganglia should be removed, as the two sides are connected by the ganglion of Ribes.

ÆTIOLOGY OF IRITIS.

W. M. Zentmayer (*Therapeutic Gazette*, August, 1907) notes the ordinarily recognized causes of iritis—syphilis, rheumatism, gout, tuberculosis, gonorrhea, diabetes and malaria—as also the fact that it may occur during the course of infectious fevers, herpes zoster and cerebro-spinal inflammations; but emphasizes, especially, the point that disturbed metabolism is now known to be a prominent factor in the production of those cases which used to be considered idiopathic. Thus, autointoxication doubtless is frequently the cause of that recurring or relapsing form which sometimes occurs in otherwise healthy persons. He is inclined to doubt that disease of the accessory sinuses plays an important part in the causation of ocular affections.

IRIDOCYCLITIS.

Parsons (*The Clinical Journal*, Nov. 14, 1906) advocates energetic local treatment with atropin, hot bathings, and if necessary leeches, during the acute stage of iridocyclitis. Mercurial inunctions often are of much value even if there are no evidences of syphilis, and the patient should be kept at rest in bed. If the disease does not yield to this treatment, vapor baths and hypodermatic injections of pilocarpin may be of service. The pupil should be kept dilated with .05 per cent atropin solution between exacerbations, and neutral tinted glasses should be worn in bright light. Any source of septic infection should be removed, and plenty of fresh air, good food and tonics given the patient.

OCULAR SYMPTOMS OF NASAL ORIGIN.

O. A. Griffin (*Jour. A. M. A.*, Nov. 9) shows by most excellent illustrations the close relationship between the eyes and the surrounding accessory sinuses of the nose, and points out the liability of inflammatory conditions in the latter producing, either directly or indirectly, a variety of disturbances in the eyes. He believes that in addition to symptoms of refractive defects, muscular imbalances, conjunctivitis, glaucoma, etc., active destructive processes, such as neuritis, retinitis, choroiditis, iritis and keratitis may be caused by infective processes in an adjacent sinus. He reports eight cases in which functional and also organic disturbances of the eyes were cured by the proper treatment of existing sinus disease, and states that he has come to regard an ocular examination incomplete which does not include an inspection of the nose and accessory sinuses.

A CASE OF QUININ AMAUROSIS.

W. Seeligsohn (*Berliner Klinische Wochenschrift*, March 4) reports the case of a woman, thirty-six years old, who suddenly became deaf and blind after having taken six grammes (92.12 grains) of quinin during a period of three days. Within twenty-four hours hearing returned, but it was ten days before she had any light preception, and about two months before her vision completely returned. The fundus appearance was similar to that in embolism of the central artery of the retina and later resembled that of atrophy of the optic nerve. When the visual field could first be taken it was found to be concentrically contracted, but gradually enlarged and became normal in about two months. The color perception was permanently injured to a marked degree. At first the reaction of the pupil to light and accommodation was entirely lost, but gradually returned to normal, although it decreased again during the next year.

VISUAL DISTURBANCES AND BLINDNESS OF NASAL ORIGIN.

O. Mayer (*Wiener Klinische Wochenschrift*, XX. Nos. 25-33) reports the case of a woman 76 years of age, who after suffering with empyema of the accessory sinuses for several years without the symptoms being severe enough to cause her to consult a physician, after an attack of coryza suddenly lost all vision in one eye, while in the other it was greatly reduced. After free

opening and irrigation of the maxillary, sphenoid and ethmoid sinuses the vision in the partially affected eye returned to almost normal, but there was no improvement in the blind eye. The blindness was the only symptom of which the patient complained. A careful examination of the accessory sinuses is urged by Mayer in cases of retrobulbar neuritis.

OPHTHALMOLOGIC PHASE OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

M. C. Posey (*Med. Record*, Aug. 17) believes that ocular troubles caused by nasal conditions can be explained by contiguity of tissue, and that mere congestion of a sinus may be sufficient to produce eye symptoms. Affections of the optic nerve, from simple œdema to active retro-bulbar neuritis, may result through contiguous tissue. Œdema of the lids is quite common and pre-lacrimal abscess is sometimes due to sinusitis. Suppuration in the frontal or ethmoidal sinuses may produce a severe orbital cellulitis. An unusual case is reported by him in which a blind spot appeared in the side of a man's left eye while in a high wind in cold weather. Careful rhinoscopic examination revealed no pus in any of the sinuses, but the erectile tissue of the turbinates was very sensitive, becoming swollen under the ordinary examination.

REVIEWS.

SQUINT AND OCULAR PARALYSIS. With a short account of the Disturbances of Muscle Balance. By E. L. Hughes. Illustrated by the author. London, 1907: H. K. Lewis, 136 Gower St., W. C.

This is a very practical text book for the student. As the author in his preface modestly puts it, "it is quite impossible to add a great deal to the excellent work that has already been done"; yet, on the other hand, he has very well succeeded in putting the subject before the student in language easily understood. We have no doubt that the book will prove quite valuable.

THE COMMONER DISEASES OF THE EYE: HOW TO DETECT AND HOW TO TREAT THEM. By C. A. Wood and T. A. Woodruff. 280 illustrations. Third edition, enlarged and improved. Chicago, 1907: W. T. Keener & Co. Price \$2.50.

The well known authors are to be congratulated on the success of their students' manual. Its intrinsic value is in this third

edition greatly enhanced by new chapters and numerous new illustrations. It is an admirable presentation of the subjects treated on and will undoubtedly see more new editions. ALT.

PAMPHLETS.

The Accessory Sinuses and Meningitis. By Ch. W. Stickle, M.D.

The Treatment of Recent Trachoma. By T. A. Woodruff, M.D.

Su un nuovo metodo di diagnosi della Tuberculosis. By L. Meille, M.D.

Symptoms of Treatment of Sinus and Jugular Thrombosis, with the Report of Five Cases. By B. R. Kennon, M.D.

Lichtbehandlung von Conjunctivalleiden. By K. K. K. Lunds-gaard, M.D.

The Origin of the Cells Found in the Deeper Layer of the Stria Vascularis. By G. E. Shambaugh, M.D.

The Preparation of the Specialist. By G. E. Shambaugh, M.D.
Some Important Surgical Relations of the Temporal Bone. By G. E. Shambaugh, M.D.

A Restudy of the Minute Anatomy of Structures in the Cochlea, with conclusions bearing on the solution of the problem of tone perception. By G. E. Shambaugh, M.D.

The Surgical Treatment of Chronic Glaucoma. By S. D. Risley, M.D.

The Anatomy of the Middle Turbinate. By H. W. Loeb, M.D.

Does the Opacity of incipient Cataract Ever Regain Transparency? By L. Connor, M.D.

The Treatment of Foreign Bodies in the Respiratory Tract and Œsophagus. By H. W. Loeb, M.D.